# BTEC Assignment Brief

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| **Qualification** | Pearson BTEC International Level 3 Subsidiary Diploma in Applied Science<br>Pearson BTEC International Level 3 Foundation Diploma in Applied Science<br>Pearson BTEC International Level 3 Diploma in Applied Science<br>Pearson BTEC International Level 3 Diploma in Environmental Science<br>Pearson BTEC International Level 3 Extended Diploma in Applied Science<br>Pearson BTEC International Level 3 Extended Diploma in Environmental Science |
| **Unit number and title** | **Unit 28: Sustainable Energy** |
| **Learning aim(s)** | **B:** Explore the generation of electricity from alternative fuel sources |
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| **Assignment title** | **Alternative energy sources** |
| **Assessor** | |
| **Issue date** | |
| **Hand in deadline** | |

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| **Vocational Scenario or Context** | Your workplace mentor was impressed with the information about the use and impact of fossil fuels that you produced. She has now requested that you provide additional information materials for the dispay in the hallway and to give to visitors to the station that describe, explain, compare and evaluate alternative technologies and their efficiency as energy sources. |

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| **Task** | There are many ways of generating electricity. You must provide publicity materials that:<br>• **Evaluate** factors that affect the economic and operational efficiency of energy generation of renewable energy sources. This will include costs relating to building and generator construction, operating and maintenance, fuels, environmental damage. These factors have to be balanced in relation to the value of the electrical energy generated. Discuss and evaluate advances in technology that allow more efficient generation of energy in relation to cost. Examples could include turbine blade design, improvements in battery technology to store energy from intermittent energy sources like wind, solar and waves.<br>• **Explain** how the levelised cost of electricity (LCOE) is calculated to take into account factors that affect energy generation. **Compare** the efficiency of renewable energy sources to fossil fuels and nuclear power.<br>• Provide illustrated publicity materials that clearly **describe**, how technology is being used to generate renewable energy using solar, wind, water and biomass as fuels.<br>The advantages and disadvantages of using nuclear fuel as a source of energy must also be described. Sustainability, cost, risks to the |

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| | environment and the safe disposal of radioactive waste must be considered and described.<br><br>Correct scientific terminology must be used and sources must be referenced. |
| **Checklist of evidence required** | Publicity materials that provide:<br>• An evaluation of factors that affect the efficiency of energy generation.<br>• An explanation and comparison of the efficiency of different renewable energy sources.<br>• A description of the technologies used to generate renewable energy.<br>• A description of the advantages and disadvantages of using nuclear fuels. |

| **Criteria covered by this task:** | |
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| Unit/Criteria reference | To achieve the criteria, you must show that you are able to: |
| **B.D2** | Evaluate the factors that affect the efficiency of methods used to generate energy |
| **B.M2** | Explain and compare the efficiency of different renewable energy sources |
| **B.P3** | Describe the technologies used to generate renewable energy |
| **B.P4** | Describe the advantages and disadvantages of using nuclear fuels |
| **Sources of information to support you with this Assignment** | https://www.energy.gov/sites/prod/files/2015/08/f25/LCOE.pdf<br><br>https://www.renewableresourcescoalition.org/alternative-energy-sources/<br><br>https://www.greenmatch.co.uk/blog/alternative-energy-sources<br><br>https://world101.cfr.org/global-era-issues/climate-change/sources-energy-comparison<br><br>https://www.forbes.com/sites/jamesellsmoor/2018/12/30/6-renewable-energy-trends-to-watch-in-2019/ |
| **Other assessment materials attached to this Assignment Brief** | e.g. work sheets, risk assessments, case study |